

M1MA141KT1, M1MA142KT1

Preferred Device

Single Silicon Switching Diode

This Silicon Epitaxial Planar Diode is designed for use in ultra high speed switching applications. This device is housed in the SC-70 package which is designed for low power surface mount applications.

Features

- Fast t_{rr} , < 3.0 ns
- Low C_D , < 2.0 pF
- Pb-Free Packages are Available

MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$)

Rating	Symbol	Value	Unit
Reverse Voltage	V_R	40 80	Vdc
Peak Reverse Voltage	V_{RM}	40 80	Vdc
Forward Current	I_F	100	mAdc
Peak Forward Current	I_{FM}	225	mAdc
Peak Forward Surge Current	I_{FSM} (Note 1)	500	mAdc

THERMAL CHARACTERISTICS

Rating	Symbol	Max	Unit
Power Dissipation	P_D	150	mW
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55 ~ +150	$^\circ\text{C}$

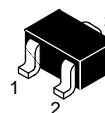
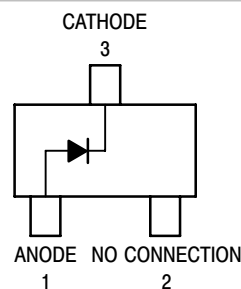
Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

1. $t = 1 \text{ sec}$



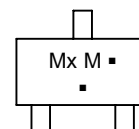
ON Semiconductor®

<http://onsemi.com>



SC-70 (SOT-323)
CASE 419
STYLE 2

MARKING DIAGRAM



Mx = Device Code
x = H for 141
I for 142

M = Date Code*
▪ = Pb-Free Package

(Note: Microdot may be in either location)

*Date Code orientation may vary depending upon manufacturing location.

ORDERING INFORMATION

Device	Package	Shipping†
M1MA141KT1	SC-70	3000/Tape & Reel
M1MA141KT1G	SC-70 (Pb-Free)	3000/Tape & Reel
M1MA142KT1	SC-70	3000/Tape & Reel
M1MA142KT1G	SC-70 (Pb-Free)	3000/Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

Preferred devices are recommended choices for future use and best overall value.

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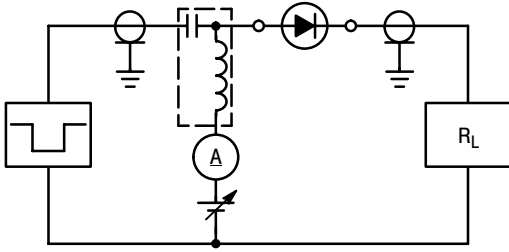
ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$)

Characteristic	Condition	Symbol	Min	Max	Unit
Reverse Voltage Leakage Current M1MA141KT1 M1MA142KT1	$V_R = 35\text{ V}$ $V_R = 75\text{ V}$	I_R	–	0.1	μA_{dc}
Forward Voltage	$I_F = 100\text{ mA}$	V_F	–	1.2	V_{dc}
Reverse Breakdown Voltage M1MA141KT1 M1MA142KT1	$I_R = 100\text{ }\mu\text{A}$	V_R	40 80	–	V_{dc}
Diode Capacitance	$V_R = 0$, $f = 1.0\text{ MHz}$	C_D	–	2.0	pF
Reverse Recovery Time (Figure 1)	$I_F = 10\text{ mA}$, $V_R = 6.0\text{ V}$, $R_L = 100\text{ }\Omega$, $I_{rr} = 0.1 I_R$	t_{rr} (Note 2)	–	3.0	ns

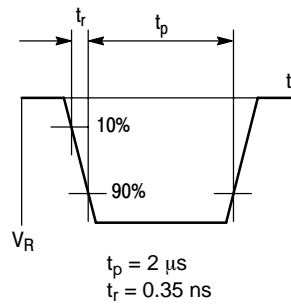
2. t_{rr} Test Circuit

M1MA141KT1, M1MA142KT1

RECOVERY TIME EQUIVALENT TEST CIRCUIT



INPUT PULSE



OUTPUT PULSE

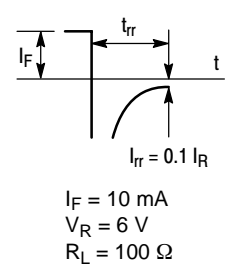


Figure 1. Recovery Time Equivalent Test Circuit

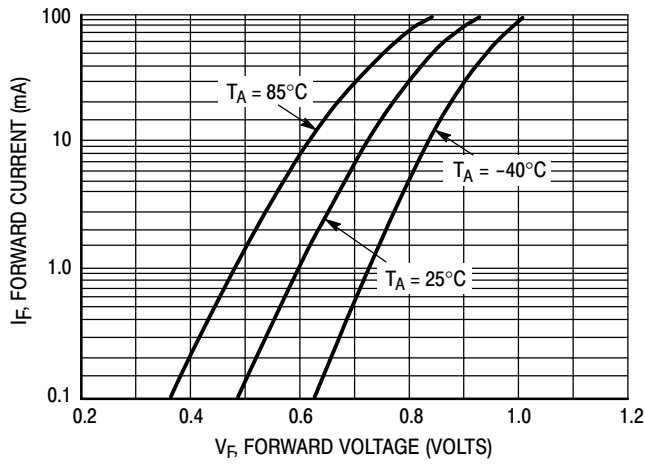


Figure 2. Forward Voltage

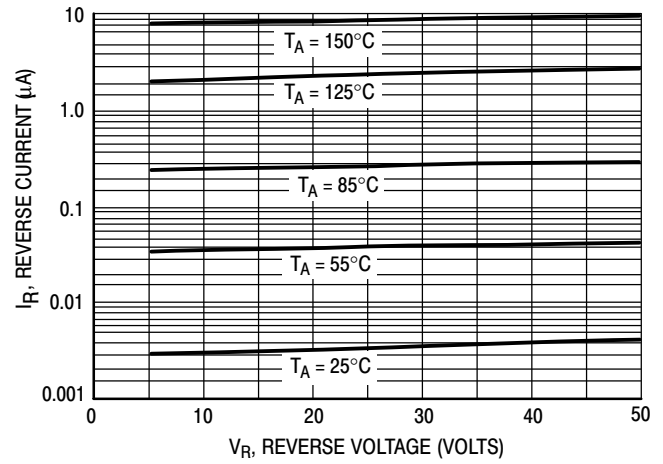


Figure 3. Reverse Current

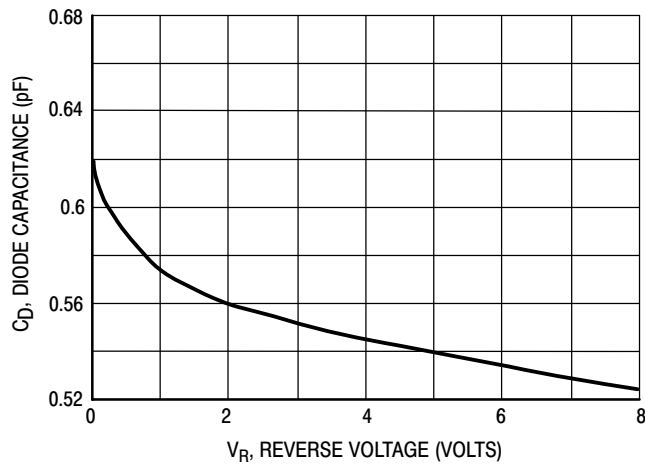
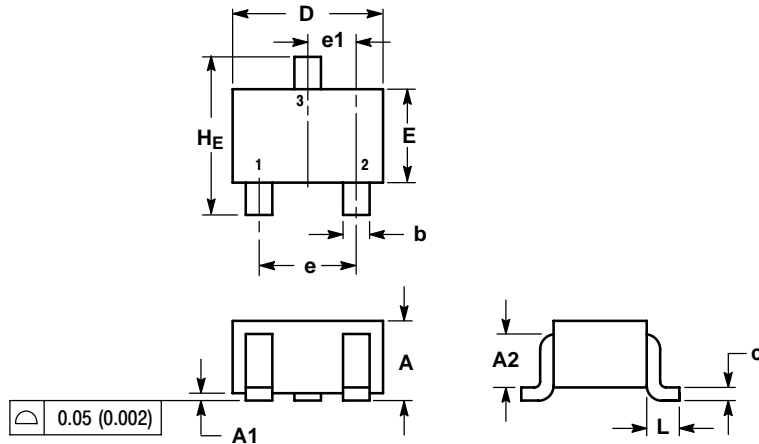


Figure 4. Diode Capacitance

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PACKAGE DIMENSIONS

SC-70 (SOT-323) CASE 419-04 ISSUE M

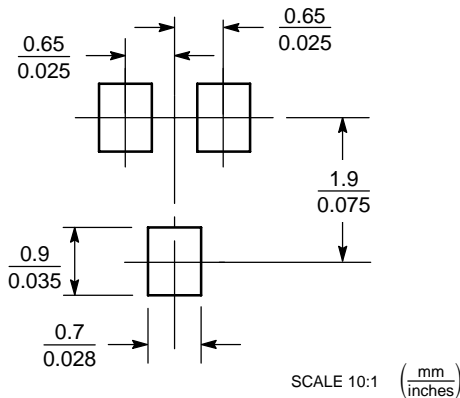


- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.80	0.90	1.00	0.032	0.035	0.040
A1	0.00	0.05	0.10	0.000	0.002	0.004
A2	0.7 REF			0.028 REF		
b	0.30	0.35	0.40	0.012	0.014	0.016
c	0.10	0.18	0.25	0.004	0.007	0.010
D	1.80	2.10	2.20	0.071	0.083	0.087
E	1.15	1.24	1.35	0.045	0.049	0.053
e	1.20	1.30	1.40	0.047	0.051	0.055
e1	0.65 BSC			0.026 BSC		
L	0.425 REF			0.017 REF		
HE	2.00	2.10	2.40	0.079	0.083	0.095

STYLE 2:
PIN 1. ANODE
2. N.C.
3. CATHODE

SOLDERING FOOTPRINT*



*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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